**K17U 0647**

Reg. No. : ...................................

Name : ...................................

IV Semester B.Sc. Degree (CBCSS – Reg./Supple./Imp.)
Examination, May 2017
(2014 Admn. Onwards)
**COMPLEMENTARY COURSE IN PHYSICS**
**4C04 PHY : Modern Physics and Electronics**

Time : 3 Hours

Max. Marks : 32

## SECTION – A

(Very short answer. **Each** carries **1** mark. Answer **all five** questions)

1. For the fission chain reaction to be critical the multiplication factor k = _____

2. The graphical representation of the absolute magnitude of stars plotted against the spectral class is called _____

3. Schottky defects are dominant in _____

4. In common emitter amplifier the phase difference between input and output is _____

5. The decimal equivalent of $(1011.0101)_2$ is _____

(5×1=5)

## SECTION – B

(Short answer type. **Each** carries **2** marks. Answer **any 4** questions).

6. What is meant by mean life of a radioactive element ?

7. Explain Quarks.

8. Explain Frenkel defect.

9. What are the difference between positive and negative feedback ?

10. What is full adder ?

11. How energy is produced in a star ?

(4×2=8)

## SECTION – C

(Short essay/Problem type. **Each** carries 3 marks. Answer **any 3** questions)

12. State law of radioactive disintegration. Derive an expression to find the number of atoms present at an instant 't'.

13. Explain the effects of crystal imperfections.

14. Describe the working of an LC oscillatory circuit.

15. Write short note on OR-AND-NOT gates.

16. Write a short note on black holes. $(3 \times 3 = 9)$

## SECTION – D

(Long essay type. **Each** carries 5 marks. Answer **any 2** questions)

17. Explain common emitter transistor characteristics with circuit diagram.

18. Give an account of the evolution of a star.

19. Explain line defects in detail.

20. Explain the working of a nuclear reactor. Mention its uses. $(2 \times 5 = 10)$

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